From IT Addiction to Discontinued Use: A Cognitive Dissonance Perspective

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Abstract

One of the main topics discussed within the realm of the dark side of IT is addiction. IT addiction has been found to bring adverse consequences on users' lives. In order to overcome the difficulties associated with IT addiction, interrupting and quitting addiction has become an important research agenda. Recent research findings have shown that IT addicts do not always feel guilty about their usage, and in many cases, they do not even perceive their usage as problematic. In this study, we draw on cognitive dissonance theory to theorize and propose a model showing that the degree of users' cognitive dissonance can make a difference in their willingness to quit their IT addiction. We tested the model using data collected from 226 social network sites users. The analysis provided empirical support for our model and shed light on the mediation and moderation effects of cognitive dissonance in this process.

1. Introduction

The "dark side" of information technology (IT) use has been the focus of several recent studies in the information systems (IS) literature. The dark side is an umbrella term that broadly refers to negative phenomena related to IT use with "the potential to infringe the well-being of individuals, organisations and societies" [43, p. 161]. Despite the dominant assumption that IT use is generally a useful and desired activity that should be encouraged in order to maximize the benefits [51], research on the dark side of IT has shown that excessive IT use can also result in negative consequences [47]. Therefore, there have been several calls to examine this relatively understudied aspect of IT use [11, 43].

One of the main topics discussed within the realm of the dark side is "IT addiction" [45, 46]. In fact, recent research has shown that IT addiction has become a social phenomenon and a common problem [49], which needs special attention and control. By definition, IT addiction refers to users' maladaptive dependency on the IT use that is associated with significant negative consequences on important life activities for the users [45, 46, 49]. Since addiction to IT use can lead to adverse consequences, of which the user may or may not be completely aware, interrupting these "maladaptive dependencies" and quitting addiction have received increasing scholarly attention. For instance, some argued that the addictive use of technology instigates guilt feelings within users, leading to discontinued intentions [47, 48]. Yet, more recent findings [49] have shown that addicts do not always feel guilty about their usage. In some cases, they do not even perceive their usage as excessive or problematic, and some tend to disregard the negative consequences of their excessive IT use on their life. Such recent findings suggest that other factors may influence the mechanisms underlying IT use discontinuance following an addiction. Such factors are expected to explain the difference between addicts with high intention to discontinue their IT addiction from the similarly pathological users who have low intentions to quit. Identifying these factors is critical and can provide helpful insights on how to control users' IT addiction.

This paper has two objectives: the first is to understand what makes users quit their addiction-driven IT usage. To this end, we draw on cognitive dissonance theory (CDT) to argue that the degree of users' cognitive dissonance can make a difference in their willingness to quit problematic behaviors. Our second objective is to see the role of cognitive dissonance in combination with other previously known drivers of discontinuance intention, in particular guilt feeling and self-efficacy to discontinue IT use. To this end, we theorize and empirically establish that level of cognitive dissonance mediates the relationship between IT addiction, guilt feelings, self-efficacy to discontinue using, and discontinued intentions. We use social network sites (SNS) as the context for investigating our objectives in this study. Our findings contribute to the emerging stream of research on the dark side of IT use and addiction and helps establishing the groundwork for further studies in this

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area, in particular in finding the mechanisms that can moderate or stop user's IT addiction.

2. IT addiction and discontinued use

Addiction is generally defined as "a repetitive habit pattern that increases the risk of disease and/or associated with personal and social problems…[which] are often experienced subjectively as 'loss of control' continues despite volitional attempts to abstain or moderate use" [28, p. 224]. IT addiction, as a subset of non-substance addiction, is increasingly being recognized by researchers within and outside of IS field [45, 49, 53]. This type of addiction refers to the experience of psychological dependency, where users feel compelled to use a technology despite negative consequences, which appears to be a less rational behavior [26, 47].

IT addiction has been a source of increasing concern during the last few years for both researchers and practitioners [24], considering the surfacing statistics that strongly point to an excessive extent of usage and dependency on various hedonic technologies in both youth and adults. For example, US adults spend on average more than 11 hours per day on electronic media, including SNS [41]. In addition, existing research has shown that there can be negative consequences associated with excessive IT use and IT addiction that may affect individuals' key personal, social, and professional lives [25, 44]. As a case in point, recent surveys show that American college students spend about one-fifth of their time in class on digital devices toward "non-class purposes" including use of SNSs [29, 30]. As such, a better understanding of the underlying mechanisms for formation and, more importantly, quitting IT addiction is worthy of more investigations, which is the objective of this study.

It has been shown that the use of hedonic IT systems such as SNS can become a source of distraction, waste of time, and loss of productivity [38, 47, 49], thus triggering intention to discontinue usage. Recent research has established IT discontinuance behavior as a distinct concept, separate from the continuance behavior and intention [47]. Hence, some studies have been conducted to identify the antecedents of IT discontinued use behavior. For instance, in a recent effort, Turel [47] used social cognitive theory [2] to examine the role of guilt feeling (i.e., emotion raised due to the violation of internal standards) and self-efficacy (i.e., a belief in self to have the ability to execute an action) in explaining the users' intention to discontinue the use of Facebook. Turel [47]'s findings showed that addiction to Facebook has a positive effect on users' guilt feelings and a negative effect on their self-efficacy to discontinue using Facebook, thus can indirectly increase and decrease the users' intention to quit Facebook use. In this study, we elaborate on the role of cognitive dissonance in this process. In particular, we investigate the mediation and moderation effects of cognitive dissonance on relation between IT addiction, guilt feeling, self-efficacy, and discontinued use intention in the context of SNS use.

3. Cognitive dissonance theory

Proposed by Festinger [14], cognitive dissonance refers to a psychological state of tension or discomfort that arises when people are aware of inconsistencies between their beliefs and behaviors or between different beliefs that they hold. CDT explains that people are motivated to engage in efforts to either reduce or avoid dissonance. This can happen in two ways: (1) rationalizing the belief or the behavior to diminish its importance, hence reducing the dissonance, or (2) changing one or more dissonant beliefs or behaviors in order to make them more consistent (more consonant) with each other to reduce or avoid future dissonance. As an example, a gambler who believes that gambling has negative effects on his/her financial status may experience an uncomfortable feeling of dissonance between his/her belief and behavior [12]. According to the theory, this person is expected to engage in attempts to reduce the dissonance by either rationalizing the gambling behavior and subsiding the importance of the conflicting belief about its negative financial outcomes, or by changing his/her gambling behavior to make it more consistent with the belief about its adverse outcome. Either way, the dissonance will be reduced or avoided all together. Considering its prominence in explaining complex human behaviors, CDT has been used in numerous contexts in order to explain the individuals' decision-making and attitude changes [10].

In addition, CDT has been instrumental in explaining various addiction-related behaviors [8, 27]. As an example, Eiser, et al. [12] used cognitive dissonance theory to study the relationship between smokers' perception of addiction and their willingness as well as ability to quit. The findings showed that, on the one hand, the heavy smokers who were not concerned about the consequences of smoking ("consonant" smokers) reported smoking as pleasurable and had low intention to quit. On the other hand, heavy smokers who were concerned about the health risks of smoking ("dissonant" smokers) expressed their willingness to quit smoking if they could. In the context of IT addiction, cognitive dissonance and some of its antecedents, such as personal responsibility, choice and effort justification,

were used to explain users' willingness to change their attitudes toward online games and reducing their playing time [8].

In the broader IT usage context, CDT has been used to explain how the beliefs, expectation, and perception of technology before usage will be modified based on the actual usage experience and the feedback [5, 32]. Therefore, in this study, we utilize CDT to explain why users may discontinue their usage, after addictive patterns are established.

4. Hypotheses development

In order to understand the role of cognitive dissonance on discontinued usage and its drivers, we build on existing literature on IT addiction prevention and control [47] to propose our research model (see Figure 1). Two factors were proposed as the main drivers for discontinue intentions, namely guilt feeling and self-efficacy to discontinue using IT [47]. In this section, after explaining the role of these two drivers in formation of discontinued use intention (H1-H3), we will hypothesize the effects of cognitive dissonance in this process (H4-H6).

First, guilt feelings help modify and appropriate behaviors that are morally or socially unacceptable [4]. Defined as "a painful state of awareness that accompanies actual or contemplated violation of societal values and rules" [37, p. 2], guilt has an impact on rational decision-making by increasing awareness and sense of responsibility about a behavior and its outcomes [37]. Feeling guilty corresponds to an expectation for internal punishment, which can drive quitting the guilt-producing behavior [2]. In addition, the emotions associated with feeling guilty about a behavior may leave negative traces in the user's mind that can be easily and quickly accessed during cognitive deliberation about that behavior [52]. These negative emotions and marks can motivate people to limit or discontinue the problematic behavior to alleviate the negative emotions. Hence,

H1: Guilt feelings (from use) is positively related to discontinuance intentions.

Second, the tendency to change a behavior is usually supported by beliefs that one *can* change his/her own behavior [2]. The concept of self-efficacy generally refers to the sum of all beliefs that one is able to change the course of an action in order to produce a specific outcome [3]. Self-efficacy perceptions can help determine the goals, strengthen the commitment to actions taken to achieve them, and finally translate into the intent to execute actions [47]. When self-efficacy is high, it is more likely that an intended action (e.g. discontinue the IT use) is taken. In such situation, individuals hold more positive view of the behavior and its outcomes [50]. Therefore,

H2: Self-efficacy to discontinue is positively related to discontinuance intentions.

The level of IT addiction may decrease users' ability to stop IT use. Previous research has shown that addiction has an element of dependency and loss of control (i.e., feeling of being "hooked"), implying that addicts show weakness in controlling their behavior and may experience failure in reducing usage [12, 49]. These users typically are aware of their weakness [12, 13], and may admit that their behavior is problematic, but still express their inability to quit [31]. The awareness of the problem and inability to quit connotes to one's low level of self-efficacy, despite the awareness about the addiction problem [47]. The higher the users' addiction, the stronger the feeling of being "hooked", which reduces users' perception of ability to give up that behavior (i.e. lower self-efficacy) [13, 47]. Thus,

H3: IT addiction is negatively related to self-efficacy to discontinue using IT.

Prior studies [e.g., 9, 40] explained that cognitive dissonance is aroused because of the adverse consequences associated with a behavior. In other words, individual's perception of negative consequences associated with their behavior has been shown to be the necessary and sufficient condition for the arousal of dissonance [40]. As Cooper and Fazio [9] explained, dissonance motivation occurs only when people notice that their behavior has brought about an aversive consequence, which then activates a search

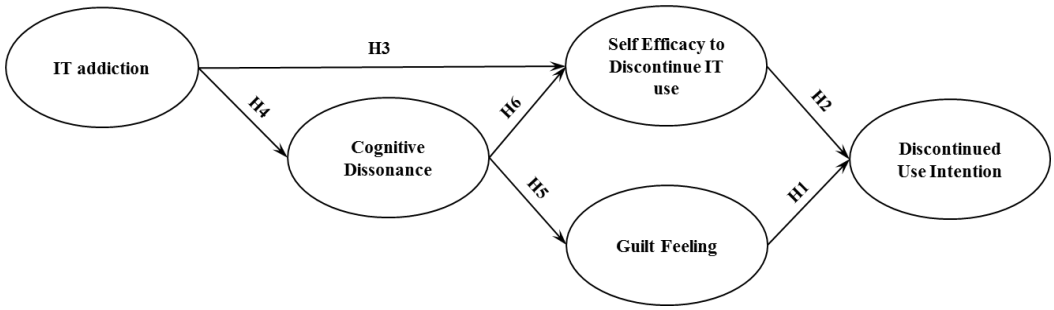


Figure 1. Research Model

for responsibility. If an attribution of self-responsibility for the aversive consequence is made, then cognitive dissonance is aroused. Scher and Cooper [40] empirically validated this explanation and have argued "dissonance is a theory about the consequences of being responsible for negative events" (p. 903). Prior studies have pointed to the perceived negative consequences as a main element in both the conceptualization and operationalization of the addiction construct. For example, Turel, et al. [45, p. 1044] argued that IT addiction is "exhibited through an obsessive pattern of IT-seeking and IT-use behaviors that take place *at the expense of other important activities*" [emphasis added]. Similarly, measurement scales used in prior studies for self-reported IT addiction involves several items assessing the respondents' perception of negative results of their excessive use of IT. On this basis, we argue that higher levels of IT addiction incorporate higher levels of perceptions of negative consequences of this behavior. Therefore, we can expect that higher levels of IT addiction can induce a search for responsibility and thus increase the dissonance. Considering that the negative consequences embedded in the IT addiction conceptualization are attributed to the users' behavior [45], an attribution of self-responsibility for the negative consequence and arousal of cognitive dissonance is likely. Hence,

H4: IT addiction is positively associated with cognitive dissonance

Prior research in psychology discipline has shown that cognitive dissonance occurs when a behavior produces consequences that one prefers not to have [17], for which he may feel ashamed and guilty [40]. In other words, feeling of dissonance involves a self-attribution of negative consequences as a result of the person's behavior. Assuming that (rational) people naturally want to have a desired consequence from an action, self-attribution and self-responsibility of a negative consequence leads to a perception that they are not capable of working toward their desired ends. Such perceptions can increase the users' guilt feelings.

Consistent with this argument, prior studies on substance abuse made a distinction between "consonant" (i.e., low cognitive dissonance) and "dissonant" (i.e., high cognitive dissonance) consumers [12]. "Consonant" consumers are described as individuals who hold relatively positive attitudes about their substance abuse and do not express a wish to stop. As a result, they experience lower levels of cognitive dissonance toward their addictive behavior. Whereas "dissonant" consumers are described as continuing to use the substance in spite of a wish to stop and they agree with a wide variety of negative statements and arguments against their addictive behavior [12]. As such, dissonant consumers experience higher levels of cognitive dissonance and feel guilty, as a result of their addiction. Therefore, we argue that,

H5: Cognitive dissonance is positively associated with guilt feeling

Once cognitive dissonance is aroused, it feels wrong (see H5). CDT explains that in such a situation, the individual is expected to seek to reduce the cognitive dissonance via one of three mechanisms: (1) changing the perceptions about the negativity of the consequences of the behavior (i.e., beliefs), (2) changing the self-responsibility (avoiding self-attribution) for the behavior and its negative consequences, or (3) changing the behavior to make it more consonant with the belief (perception of negative consequences of the behavior). When the situation precludes the effectiveness of mechanisms 1 and 2, it is highly likely that the individual will engage in attempts to reduce the dissonance by changing his/her behavior to make it more consistent with his/her beliefs about its negative consequences (i.e., mechanism 3). Prior studies have shown that higher levels of cognitive dissonance about an addiction implies individual's awareness of the negative consequences of the addiction [12]. This impedes the effectiveness of mechanism 1, as well as dismissing self-responsibility for the negative consequences [40] (mechanism 2). Therefore, higher levels of cognitive dissonance about an addiction reduce the effectiveness of mechanisms 1 and 2 (i.e., changing the perceptions about the consequences of the behavior and avoiding the self-responsibility for the behavior) for reducing the cognitive dissonance. As a result, higher cognitive dissonance, and essentially reducing it, can act as a self-motivation for individuals to engage in attempts in reducing or controlling their addictive behavior. Self-motivation relies on the intervening processes of goal setting and self-evaluative reactions to one's own behavior [1]. Prior studies [1] have shown that self-motivation serves as an effective mechanism for cultivating competencies and perceptions of self-efficacy toward the behavior of interest. Hence, we propose:

H6: Cognitive dissonance is positively associated with self-efficacy to discontinue using IT

5. Methodology

5.1. Context: Social network sites (SNS)

SNS is a web-based virtual community that "allows users to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view

and traverse their list of connections and those made by others within the system" [7, p. 211]. Although the use of such networks provides known benefits, recent research and usage statistics have warned about users' dependency and addiction [46, 47]. For instance, Hofmann, et al. [18] showed that SNS can be addictive and its effect is comparable to that of alcohol and drug addiction. Thus, we believe that SNS provides a relevant and appropriate context for studying IT addiction in this study.

5.2. Procedure and Sample

To avoid the potential effects of common method variance on our results, we collected the self-report data in two rounds (t_1: week 1: and t2: week 4) from 226 SNS users who were undergraduate and graduate students at a large North American university. This sampling choice was made because university students are more prone than others to develop addictions with use of SNS due to their flexible schedules and their frequent use of such sites for developing their identities [23, 47]. The respondents included 49% women and 51% men, and their average age was 21 (18-39, SD= 2.52). They, on average, had more than 5 years of SNS experience and spent more than 89 minutes per day on its use. The survey asked students to focus on their most frequently used SNS.

5.3. Measures

Measurement items were adapted from well-established and reliable research instruments. Specifically, *SNS addiction* was measured at t_1 using self-reported (perceived) measures used in previous addiction studies [47]. *Cognitive dissonance* was adapted from Metzger, et al. [33]'s scale and measured in t_1. *Guilt feeling, self-efficacy to discontinue using SNS*, and *discontinued use intention* were measured at t_2 using Turel [47]'s instruments, adapted to the context of our study. Considering that our model involves self-reporting negative phenomena, namely cognitive dissonance, guilt feeling, and SNS addiction, we controlled for the effect of *social desirability bias* at t_1, using the short 13-item version of Marlowe-Crowne scale [39].

6. Data analysis and results

6.1. Preliminary analyses

A series of preliminary data analyses were performed to ensure the absence of four artifacts that potentially compromise the quality of analyses: (1) low reliability of factors [36], (2) low validity of factors [42], (3) serious deviations from normality assumption [34], and (4) multicollinearity among the factors [34]. To this end, first, the descriptive statistics, kurtosis and skewness indices, average variance extracted (AVE) scores, reliability scores, and inter-factor correlations were calculated for the factors, as outlined in Table 1. Second, a confirmatory factor analysis (CFA) model using AMOS version 23 was estimated to ensure the goodness-of-fit of the measurement model.

The results of these analyses demonstrated that all factors were internally consistent and both Cronbach's alphas and Fornell and Larcker [15]'s composite reliability scores were all above 0.7 [36]. Moreover, the results demonstrated good construct validity with square root of AVE scores over 0.75, which well exceed the corresponding correlations with other factors [42]. Furthermore, the kurtosis and skewness indices were between ±3, which does not indicate any serious deviation from normality [21, 34]. Moreover, variance inflation factor (VIF) indices of less than 1.59 indicated that multicollinearity was not an issue in these data [34]. Furthermore, the CFA estimation showed that the measurement model fits the data well (RMSEA = 0.066 with 95% confidence interval of (0.058 – 0.074); SRMR = 0.044; CFI = 0.95; IFI =

Table 1. Descriptive statistics, correlations, and validity information

		Mean (S.D.)	CR	MSV	Sk. (Kr.)	1	2	3	4	5
1	**Guilt Feeling (t_2)**	2.04 (1.26)	0.956	0.318	1.26 (0.95)	**0.88**				
2	**Cognitive Dissonance (t_1)**	2.18 (0.88)	0.921	0.265	0.87 (0.57)	0.30	**0.84**			
3	**Addiction (t_1)**	2.77 (1.20)	0.911	0.147	0.52 (-0.52)	0.36	0.42	**0.75**		
4	**Discontinued Use Intention (t_2)**	2.00 (1.39)	0.957	0.242	1.75 (2.83)	0.26	0.44	0.32	**0.94**	
5	**Self-Efficacy (t_2)**	3.28 (2.04)	0.969	0.027	0.44 (-1.12)	0.07	0.05	-0.22	0.12	**0.96**

SD: Standard Deviation; Sk.: Skewness; Kr.: Kurtosis; CR: Composite Reliability; MSV: Maximum Shared Variance.
Off-diagonal elements are inter-construct correlations and bold diagonal elements are square roots of average variance extracted (AVEs).

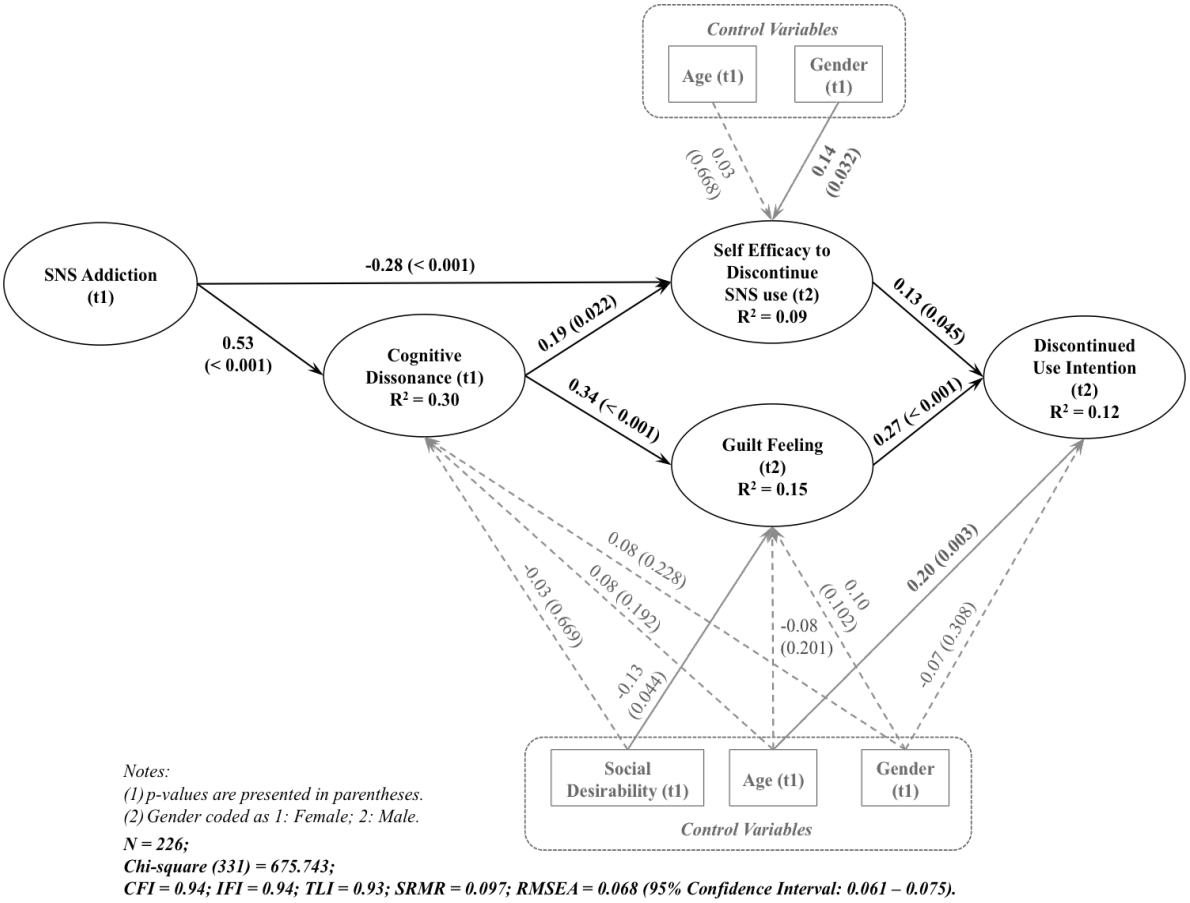


Figure 2. Results of SEM Analysis

0.95; and TLI = 0.94).

6.2. Hypotheses testing

The results of SEM analyses show that the proposed research model (Figure 1) exhibits good fit to the data (RMSEA = 0.068, with 95% confidence interval of (0.061 – 0.075); SRMR = 0.097; CFI = 0.94; IFI = 0.94; and TLI = 0.93). Furthermore, estimated path coefficients and their significance levels (Figure 2) show that all hypotheses were supported.

Results of our analysis confirmed our expectations based on [47] findings that users' guilt feeling and self-efficacy to discontinue using SNS are positively associated with users' discontinued use intention (H1: 0.27, $p < 0.001$; H2: 0.13, $p = 0.045$). As expected, SNS addiction is negatively associated with users' self-efficacy to discontinue using SNS (H3: -0.28, $p < 0.001$). Furthermore, SNS addiction is positively associated with users' cognitive dissonance about SNS use (H4: 0.53, $p < 0.001$), which in turn is positively associated with users' guilt feeling (H5: 0.34, $p < 0.001$) and users' self-efficacy to discontinue using SNS (H6: 0.19, $p = 0.022$). Together, our model respectively explained 30%, 15%, 9%, and 12% of the variance in users' cognitive dissonance, users' guilt feeling, users' self-efficacy to discontinue using SNS, and users' discontinued use intention.

6.3. Total effects

Bollen Kenneth [6] argues that it is important to consider the total effects, in addition to the significant direct effects that are indicated by path coefficients in a SEM model. Total effects present the combined effect of any direct path from a given factor (e.g., SNS addiction) to the dependent factor (e.g., self-efficacy to discontinue using SNS), as well as any indirect effects transmitted through other intervening factors, such as cognitive dissonance in our model, which are calculated by the product of the path coefficients along an indirect route [35].

For example, in our model (see Figure 2), SNS addiction has a significant direct effect on the self-efficacy to discontinue using SNS (-0.28), as well as an indirect effect through cognitive dissonance (0.53 ×

0.19 = 0.10). The combination of these two effects is reflected in the total effect of SNS addiction on the self-efficacy to discontinue using SNS (-0.28 + 0.10 = -0.18), meaning that a one standard deviation increase in SNS addiction results in a 0.18 standard deviation decrease in the self-efficacy to discontinue using SNS. Table 2 shows the total effects for each of the factors in our model.

Table 2. Total Effects

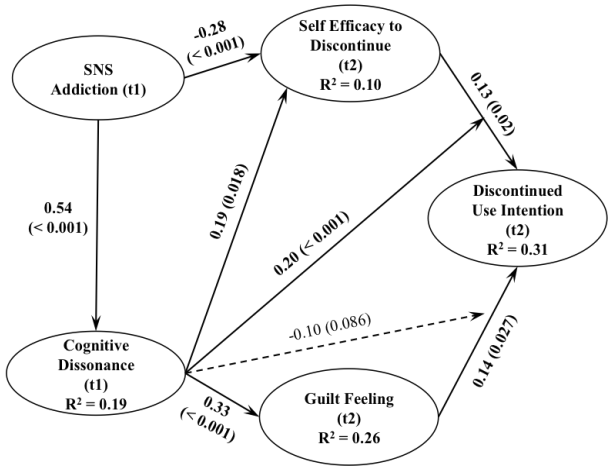
Factors	Direct Effect	Indirect Effect	Total Effect
Dependent Factor: Cognitive Dissonance			
Addiction to SNS	0.53	–	0.53
Dependent Factor: Guilt Feeling			
Addiction to SNS	–	0.18	0.18
Cognitive Dissonance	0.34	–	0.34
Dependent Factor: Self-Efficacy to Discontinue SNS use			
Addiction to SNS	-0.28	0.10	-0.18
Cognitive Dissonance	0.19	–	0.19
Dependent Factor: Discontinued Use Intention			
Addiction to SNS	–	0.03	0.03
Cognitive Dissonance	–	0.12	0.12
Guilt Feeling	0.27	–	0.27
Self-Efficacy to Discontinue Using SNS	0.13	–	0.13

6.4. Post-hoc Analysis (1): Moderation Effects of Cognitive Dissonance

In addition to having direct effects on self-efficacy (to discontinue using) and guilt feeling, cognitive dissonance can plausibly moderate the effect of self-efficacy and guilt feeling on discontinuance intention. In particular, cognitive dissonance can motivate the users to engage in efforts to either reduce or avoid uncomfortable feelings of dissonance resulted from addiction [12, 40]. As such, it seems plausible that under low cognitive dissonance conditions users are less motivated to act upon their guilt and self-efficacy considerations. Hence, their effects on discontinuance intentions can be expected to be higher when cognitive dissonance is higher. To investigate these plausible moderation effects of cognitive dissonance, we modified our structural model by adding two moderation effects of cognitive dissonance on the relations between guilt feeling and discontinuance intention and self-efficacy and discontinuance intention (see Figure 3(a)), using the same control variables.

The results of SEM analysis, depicted in Figure 3(a), show that, as expected, cognitive dissonance positively moderates the relation between self-efficacy and discontinuance intention. However, its moderation effect on the relation between guilt feeling and discontinuance intention is only (marginally) significant at 0.10.

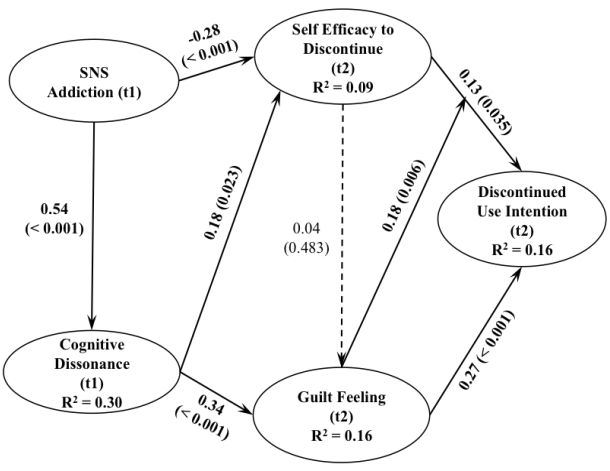
6.5. Post-hoc Analysis (2): Moderation-Mediation Effects of Guilt Feeling



p-values are presented in parentheses.

N = 226;
Chi-square (376) = 719.588;
CFI = 0.94; IFI = 0.94; TLI = 0.93; SRMR = 0.069; RMSEA = 0.064 (95% Confidence Interval: 0.057 – 0.071).

Figure 3(a). Post-hoc Analysis of the Moderation Effects of Cognitive Dissonance



p-values are presented in parentheses.

N = 226;
Chi-square (353) = 713.844;
CFI = 0.93; IFI = 0.93; TLI = 0.92; SRMR = 0.096; RMSEA = 0.067 (95% Confidence Interval: 0.060 – 0.075).

Figure 3(b). Post-hoc Analysis of Moderation and Mediation Effects of Guilt Feeling

A recent study [48] has shown a complex role of guilt feeling in user decisions. It specifically shows that reduced discontinuance behavioral control, which is conceptually related to self-efficacy to discontinuance, can inform guilt formation: when people feel they lose control over the ability to quit, they feel guilty. Furthermore, it was suggested (but not supported) that guilt feeling might positively moderate the effect of efficacy beliefs on discontinuance intentions [48]: when people feel guilty regarding a behavior (e.g., SNS addiction), they will pay stronger attention to their ability to discontinue the guilt-generating behavior, which can increase the effects of self-efficacy on discontinued intention. As such, in this post-hoc analysis, we investigate the moderation-mediation effects of guilt feeling on the self-efficacy, depicted in Figure 3(b): whether the effect of self-efficacy on discontinuance is *moderated* by guilt feeling, and whether it remains significant after it is *partially mediated* through guilt feeling.

The results of SEM analysis (Figure 3(b)) show that, as expected, guilt feeling positively moderates the relation between self-efficacy and discontinuance intention. However, guilt feeling has no mediating effect on the relation between self-efficacy and discontinuance intentions (p-value = 0.483).

7. Discussions and conclusion

Our findings underline the important role of cognitive dissonance in understanding the mechanisms underlying the relation between SNS addiction and discontinued use intention. In particular, our study complements prior findings by showing that higher levels of perceived SNS addiction is associated with higher levels of users' cognitive dissonance about their SNS use and its adverse consequences for them. Higher levels of cognitive dissonance are in turn associated with higher levels of guilt feeling as well as self-efficacy to discontinue using SNS for the users, both of which are positively associated with users' intention to discontinue using SNS. To this end, our findings explain that the relation between SNS addiction and guilt feeling is mediated by cognitive dissonance. In particular, the extent of guilt feeling as a result of SNS addiction depends on the level of users' cognitive dissonance that the user perceives about his/her addictive behavior. As such, SNS addiction has a total effect of 0.18 on guilt feeling via cognitive dissonance. Guilt feeling in turn increases users' intention to discontinue using SNS.

Furthermore, our model builds on prior research on addiction and portrays a more complex picture of the relation between SNS addiction and users' self-efficacy to discontinue using SNS. While our findings confirm findings in prior studies showing that SNS addiction negatively affects users' self-efficacy to discontinue using SNS [47, 48], we also showed that SNS addiction has a positive indirect effect on users' self-efficacy via users' cognitive dissonance. Therefore, while higher levels of SNS addiction can create the feeling of being "hooked" on the SNS (reducing users' perceptions of self-efficacy to quit), it can also increases the users' perception of cognitive dissonance because of the negative consequences associated with SNS addiction. Higher cognitive dissonance creates an internal discomfort for the user, which acts as a motivation for users to try controlling their addiction. Such self-motivation acts as an effective mechanism for cultivating higher perceptions of self-efficacy to discontinue using SNS [1]. Therefore, viewing the relation between addiction and self-efficacy from a CDT perspective helps better understand and explain its underlying complexity.

Our findings provide important implications for practice, in particular with respect to controlling addiction and interrupting compulsive usage habits. Use of hedonic IT, such as SNS, is increasing [38]. Our findings show that a plausible way to help individuals with SNS addictions to reduce or quit usage is to increase their cognitive dissonance. Our findings suggest that making users aware of their addiction, in particular the negative consequences caused by addiction, increases their cognitive dissonance about their behavior.

Higher users' perception of cognitive dissonance can in turn increase their intention to discontinue usage via two mechanisms: (1) increasing their guilt feeling, which acts as a motivation to discontinue, and (2) cultivating a sense of ability to discontinue usage, which acts as a perception of ability to discontinue. The results of our total effects calculations show that while the former seems to be an effective mechanism, the latter does not equally contribute to quitting addiction. In particular, while increasing cognitive dissonance can boost users' self-efficacy to discontinue using SNS, the negative effect of addiction on the self-efficacy seems to be more dominant. In other words, while increasing users' cognitive dissonance can indeed significantly improve their perception of ability to stop the addictive behavior, it may not be enough to overcome the negative effects of feeling "hooked" on the addiction object (e.g. IT). Overall, addiction reduces users' self-efficacy to quit (total effect = –0.18), while it can increase their guilt feelings (total effect = 0.18). This finding suggests that creating awareness of the negative consequences can effectively induce the needed motivation to control and limit SNS addiction for users, but may not be enough for inducing the sense of ability to discontinue their use.

Therefore, stronger interventions, including medical treatment and psychiatric interventions, might be needed. Our finding helps explain why some excessive users, while might completely be aware of their addiction and its negative consequences, do not curb their addictive behavior.

Our findings also shed light on interesting avenues for future research. First, it would be interesting for future research to investigate the role of other plausible antecedent of addiction, such as stress [16], psychological well-being [22], self-awareness [19], response efficacy [54], and moderated use [20], and how they affect SNS use via cognitive dissonance-related mechanisms. Second, future research can take a deeper look into the effect of self-efficacy on the discontinuance intention, in particular to see if too much of self-efficacy (over-confidence in one's ability to quit addiction) might have negative effects on the discontinuance intentions. Adding this plausible negative effect to our findings (i.e., the positive effect) may result in a nonlinear relation between the two factors, which is worthy of investigation in future studies.

Finally, Vaghefi, et al. [49] has recently shown that while a majority of users with SNS addiction acknowledge their addiction and its negative consequences, another group of similarly excessive users do not acknowledge the negative consequences of their addictive behavior and seem even pleased with their behavior. Future research can draw on CDT to investigate whether users' cognitive dissonance (e.g. consonant versus dissonant users) can explain this pattern and how it affects these users' continuance and discontinuance intentions.

8. References

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